

## WHAT IS CLAIMED IS:

1. An AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:
  - a first constant-current control device which performs first constant-current control for charging said battery;
  - 10 a second constant-current control device which performs second constant-current control for supplying an electric current necessary to drive said electronic apparatus; and
  - 15 a voltage detecting device which detects a voltage drop of the DC output, wherein if the output voltage becomes lower than a preset value, the second constant-current control for supplying the electric current necessary to drive said electronic apparatus is performed.
- 20 2. An AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to said electronic apparatus, comprising:
  - 25 a first constant-current control device which performs first constant-current control for charging said battery;

a second constant-current control device which performs second constant-current control for supplying an electric current necessary to drive said electronic apparatus;

5 a voltage detecting device which detects a voltage drop of the DC output; and

an internal temperature detecting device which detects an internal temperature,

wherein if the internal temperature becomes 10 higher than a preset value, the DC output is shut down or the first constant-current control for charging said battery is performed.

3. An AC adaptor separated from an electronic apparatus, and having a DC output unit which performs 15 outputting under constant-voltage/constant-current control in order to charge a battery connected to said electronic apparatus, comprising:

a first constant-current control device which performs first constant-current control for charging 20 said battery;

a second constant-current control device which performs second constant-current control for supplying an electric current necessary to drive said electronic apparatus;

25 a voltage detecting device which detects a voltage drop of the DC output; and

a timer device which starts when detecting the

electric current necessary to drive said electronic apparatus,

wherein if the constant-current control for supplying the electric current necessary to drive said 5 electronic apparatus continues for not less than a preset time, the DC output is shut down or the first constant-current control for charging said battery is performed.

4. The AC adaptor according to claim 2, further 10 comprising a display device, wherein said display device displays switching from the constant-current control for supplying the electric current necessary to drive said electronic apparatus to the shutting down the DC output, or the constant-current control for 15 charging said battery is performed.

5. The AC adaptor according to claim 3, further comprising a display device, wherein said display device displays switching from the constant-current control for supplying the electric current necessary to 20 drive said electronic apparatus to the state that the DC output is shut down or the constant-current control for charging said battery is performed.

6. An electric current control method for an AC adaptor separated from an electronic apparatus, and 25 having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus,

comprising:

    a first constant-current control step of  
    performing first constant-current control for charging  
    the battery;

5       a second constant-current control step of  
    performing second constant-current control for  
    supplying an electric current necessary to drive the  
    electronic apparatus; and

10      a voltage detection step of detecting a voltage  
    drop of the DC output,

    wherein if the output voltage becomes lower than  
    a preset value, the second constant-current control  
    step of supplying the electric current necessary to  
    drive the electronic apparatus is performed.

15      7. An electric current control method for an AC  
    adaptor separated from an electronic apparatus, and  
    having a DC output unit which performs outputting under  
    constant-voltage/constant-current control in order to  
    charge a battery connected to the electronic apparatus,  
20      comprising:

    a first constant-current control step of  
    performing first constant-current control for charging  
    the battery;

    a second constant-current control step of  
25      performing second constant-current control for  
    supplying an electric current necessary to drive the  
    electronic apparatus;

a voltage detection step of detecting a voltage drop of the DC output; and

an internal temperature detection step of detecting an internal temperature,

5 wherein if the internal temperature becomes higher than a preset value, a step of shutting down the DC output, or the step of first constant-current control for charging the battery is performed.

8. An electric current control method for an AC  
10 adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:

15 a first constant-current control step of performing first constant-current control for charging the battery;

a second constant-current control step of performing second constant-current control for  
20 supplying an electric current necessary to drive the electronic apparatus;

a voltage detection step of detecting a voltage drop of the DC output; and

a timer step which starts when detecting the  
25 electric current necessary to drive the electronic apparatus,

wherein if the constant-current control step of

supplying the electric current necessary to drive the electronic apparatus continues for not less than a preset time, a step of shutting down the DC output, or the first constant-current control step of charging the 5 battery is performed.

9. The method according to claim 7, further comprising a display step, wherein in the display step, switching from the constant-current control for supplying the electric current necessary to drive the 10 electronic apparatus to the shutting down the DC output, or the constant-current control for charging said battery is displayed.

10. The method according to claim 8, further comprising a display step, wherein in the display step, switching from the constant-current control for supplying the electric current necessary to drive the 15 electronic apparatus to the shutting down the DC output, or the constant-current control for charging said battery is displayed.

20 11. A computer program for allowing a computer to execute an electric current control method for an AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to 25 charge a battery connected to the electronic apparatus, comprising:

a first constant-current control step of

performing first constant-current control for charging the battery;

- a second constant-current control step of
- performing second constant-current control for
- 5 supplying an electric current necessary to drive the electronic apparatus; and

a voltage detection step of detecting a voltage drop of the DC output,

- wherein if the output voltage becomes lower than
- 10 a preset value, the second constant-current control step of supplying the electric current necessary to drive the electronic apparatus is performed.

- 12. A computer program for allowing a computer to execute an electric current control method for an AC
- 15 adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:

- 20 a first constant-current control step of
- performing first constant-current control for charging
- the battery;

- a second constant-current control step of
- performing second constant-current control for
- 25 supplying an electric current necessary to drive the electronic apparatus;

a voltage detection step of detecting a voltage

drop of the DC output; and

an internal temperature detection step of  
detecting an internal temperature,

wherein if the internal temperature becomes

5 higher than a preset value, a step of shutting down the  
DC output, or the step of first constant-current  
control for charging the battery is performed.

13. A computer program for allowing a computer to  
execute an electric current control method for an AC  
10 adaptor separated from an electronic apparatus, and  
having a DC output unit which performs outputting under  
constant-voltage/constant-current control in order to  
charge a battery connected to the electronic apparatus,  
comprising:

15 a first constant-current control step of  
performing first constant-current control for charging  
the battery;

a second constant-current control step of  
performing second constant-current control for  
20 supplying an electric current necessary to drive the  
electronic apparatus;

a voltage detection step of detecting a voltage  
drop of the DC output; and

a timer step which starts when detecting the  
25 electric current necessary to drive the electronic  
apparatus,

wherein if the constant-current control step of

supplying the electric current necessary to drive the electronic apparatus continues for not less than a preset time, a step of shutting down the DC output, or the step of first constant-current control for charging the battery is performed.

5 14. A computer-readable recording medium characterized by recording computer programs cited in claim 11.

10 15. A computer-readable recording medium characterized by recording computer programs cited in claim 12.

16. A computer-readable recording medium characterized by recording computer programs cited in claim 13.

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